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To: Content Analysis Enterprise Team  
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From: Coryell A. Ohlander, hydrologist  
RE: Unified Federal Policy for Clean Water Act  
Response to Town Meeting Denver 3/16/00

Per request, the following statements are part and parcel to the UFP policy presented. I don't know exactly what the scope of the CAET job is, but some of the detail work has been done and presumably can save time in putting flesh on the bones of the policy. My guess is that few people will argue about the policy - since it is part of CWAP, supported by the law and at the heart of the several major TMDL lawsuits. As you are aware, the devil is in the detail. The scope of the questions handed out at Denver's public meeting suggest this generic level of concern; however, the request was for detail.

Having spent 16 years as R-2's Regional Hydrologist, I can fairly conclude that few FS teams made up of subject matter specialists know much about the law. About a year ago, Keith McLaughlin, FS, WO, Hydrology and Water Quality Group Leader, requested a national review of T-Walk (Thalweg -Watershed Area Link). (T-Walk is a system supported by R-2 and R-3 to address compliance with the Clean Water Act and cooperation with the seven States in R-2 & 3.) While the reviewers felt competent to challenge numerous technical issues, it was abundantly clear that few reviewers had any real understanding of what the law, regulation, and case law actually impose on the Forest Service. The consensus was that a legal framework was the lawyers' problem and "ologists" shouldn't muck around with it. In contrast, the view initiated by Charles Lennahan (circa 1982), Senior Council, OGC, Denver (now retired), and taken by T-Walk, was that a firm and **detailed** understanding of the law was essential for monitoring & evaluation.

My March 16th letter to Jim Lyons re UFP suggested that the CAET be given a thorough indoctrination of what the law and the myriad of regulations actually impose on federal land managers. Without such a foundation, I doubt the ability of CAET to function adequately or to focus on the most demanding tasks required for watershed condition or aquatic assessment. Since a strong legal background was not created for either HCA (Hydrologic Condition Assessment) or PFC (Proper Functioning Condition), the whole strength has to be built up from UFP. As a further complication, the T-Walk national review participants were unaware of the requirements of evidentiary standards (i.e. CWA Sec 505) - which, to my way of thinking, has to be the center of "good science." One typical failure is the use of ordinal indexes to generate "data"; if CAET condones the use of such ordinal indexes, then you will not achieve "good science" let alone legal defensibility.

Over several years of working with Mr. Lennahan, five insights crystallized that had important bearing on the R-2/3 effort and has equal application to the UFP: know the Rules; know the Authorities; work to the Toughest of the requirements; work to make the future Easier; and Do it right.

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... AND THE DEVIL IS IN THE DETAIL

While there is enough spread in the policy to infer a general understanding of the Clean Water Act, there is nothing that points to detailed understanding or to inclusion of the toughest requirements. Considering the law & consequent regs as an expression of what the public has already told federal managers to do, along with the formal roles assigned to States, EPA, USF&WS, COE, NMFS, and indirectly to FHWA, my focus will be on expected results and the toughest of the legal requirements, given the questions distributed in Denver 3/16.

Q 1. Does proposed policy take the right approach? What do you like? What needs to be changed? What direction should we be pursuing? What is missing?

[] Yes - policy is the right direction. Between the States and EPA we have a bewildering tangle of requirements that change about every 4 or so years. If you work toward the most demanding of the legal requirements, including case law, then UFP efforts will be both short and long term cost effective. As a policy, it can only be effective if it doesn't merely set off another endless round of wrangling among fisheries biologists and hydrologists. Perhaps with the Sec of Ag & Int at the table, we can get past the inability of the specialists to work out a common set of definitions. There is a priority here: define first what you consider to be the end points with enough detail so people can respond sensibly. There also has to be enough separation into categories so there is a chance of complying with State requests. That means looking at the array of current State definitions for designated uses and balancing UFP with State reporting under S305 and S319. Not everyone will get their own way, but it can be done if the Sec of Ag & Int are willing to be hardnosed. Are they?

If, as was said at the Denver mtg., EPA is the lead agency, then one end point has to measure the number of stream miles occurring in a particular aquatic health class because such an assessment is fundamental to the watershed reporting process for S305(b) (and S319 if EPA ever gets on with it). Officially issued under S304, the 1983 Waterbody Assessment Manual, a companion to WQ Standards, offered six aquatic life health classes that incorporates fish as well as macroinvertebrates. But, so far, with FS's "ologist" paranoia, all that happens is endless argument - about 18 years worth. The latest set of definitions (from 1999 Rapid Bio-Assessment) include a slightly simplified rendition of the 6 aquatic health classes but the structure and content are the same. (Class names used in T-Walk - Robust, Adequate, Diminished, Impaired, Precarious, and Catastrophic - correspond to EPA's 5 - 0):

- 5 Species composition, age classes, and trophic structure comparable to non (or minimally) impaired waterbodies of similar size in that ecoregion or watershed.
- 4 Species richness somewhat reduced by loss of some intolerant species; less than optimal abundances, age distribution, and trophic structure for waterbody size and ecoregion.
- 3 Intolerant species absent; considerable fewer species and individuals than expected for that waterbody size and ecoregion; trophic structure skewed toward omnivory.
- 2 Dominated by highly tolerant species, omnivores, and habitat generalists; top carnivores rare or absent; older age classes of all but tolerant species rare; diseased fish and anomalies relatively common for that waterbody size and ecoregion.
- 1 Few individuals and species present; mostly tolerant species; diseased fish and anomalies abundant compared to other similar-sized waterbodies in the ecoregion.
- 0 No fish, depauperate macroinvertebrates and/or periphyton assemblages.

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I think this policy can end the non-productive bickering amongst "ologists;" if the decision is made to follow EPA's official guidance. And perhaps the FS might finally grow up.

(Then again maybe not. With some embarrassment, I listened to R2's Deputy Regional Forester present Inland Western Water Initiative (IWWI) as a part of this policy. What a joke. The original R2 effort was a simple canvas and overview of watersheds to show the Regional Leadership Team where the problems were. The effort was simple, cost effective and valuable. Then it got blown up into an ego-trip for a high profile individual and an expensive exercise with unconnected information. Worse yet, after all the noise and promises R2 made to the public and to our State partners during the development of the Watershed Conservation Practices Handbook (91-96), R-2 then embarked, rudely, on an effort that ignored our partners, 95% of everything we said we were going to do, and decimated Forest level watershed budgets in the process. The public and State perception was that the FS saluted them with half of the victory sign. So much for team work.)

Upon the advice from OGC attorney, Charles Lennahan (1982), Region 2 & 3 went directly to the laws, regulations, and case law to find the most demanding tasks required of the FS. This eventually centered around watershed reporting under S319 and the creation of a watershed report acceptable to 5 participating States (1990) as a contribution to their S305b process. A second, 1995 law review also preceded Region 2's Watershed Conservation Practices Handbook (signed by the RF 12/96) and culminated in a detailed and strong watershed - stream health rationale with an emphasis on training and application at the District level. I believe a similar effort is an essential foundation for the nuts and bolts of your policy and the determination of worthwhile end points. Also, because of resource issues surrounding Colorado and Wyoming water, the WCP took nearly 5 years to bring to the table; I am sure it would be appreciated by the public involved in R-2's WCP that the new policy doesn't destroy this high cost effort. If you work toward the most demanding tasks amongst all the players, there should be no problem; however, anything lightweight is bad news.

Since many laws carry echos of the same theme, it takes a while to read thorough each law, resulting regulation, and case law. For R-2, the task evolved over several years and the review of about 14 lawyers. In the process of defining the most demanding legal tasks, the text sometimes present demands that may be hotly debated as being required by existing state or federal administration. However, legal interpretation and related procedures are often subject to change as the result of new law and regulation or politics and case law. The intent was to jump ahead to benchmarks that define goals and objectives needed to implement cost-effective monitoring and evaluation as well as report results. Ann Hooker (lawyer with USFS Policy Analysis 1992; now with FAA) worked with this viewpoint and provided a series of careful and indepth commentaries. She also helped sort out the widespread differences of opinion and made sense of the comments, oral and written, offered by a dozen or so lawyers representing USDA Office of General Council, EPA Region 8, Sierra Club, Environmental Defense Fund, Natural Resources Defense Council, Wilderness Society, and 3 in private practice. The results of this collaborative effort (lawyers & hydrologists) for the most demanding tasks are summarized as end points in T-Walk's Part 1 Legal Framework:

#### SUMMARY AND CONCLUSIONS

CWA S319 on nonpoint source pollution control is not just another pretty face. The State controls the program, subject to EPA approval, which in turn is subject to CWA S505 "Citizen Suits" and Court sanction. Both CWA S313 and 319 provide an exposed public forum in which an agency is evaluated for the water quality job being done. Case law is strong enough to insure agency financial responsibility and the legal dimensions against which performance is measured. Failure to budget

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for - and commit people - to the goals of the Clean Water Act brings up the question of who is going to manage National Forest System watersheds.

### **Regional Water Quality Program**

The Clean Water Act has a watershed focus and includes a problem analyses of current trends, quantification of waterbody health, risk assessment of selected watersheds and activities, and a summary of watershed damage control programs and improvement actions to be taken. The State has the leverage to ask for any or all such information. It will be costly and disorganized not to include routine water quality reporting procedures into current planning operations. The Regional water quality program focus is as follows:

#### General Application -

- stay off the impaired watershed list.
- fix watersheds that are currently on the list.
- fix unlisted watersheds that fail to meet Clean Water Act goals.
- meet S404 exemption criteria: mandatory BMP's and no stream impairment.
- make monitoring efforts good enough for judicial use under Sec 505.
- concentrate monitoring efforts on advance warning systems.
- train/convince field people to immediately take care of small problems.
- routine measurement of ecosystem stability, diversity, and productivity.
- report results in terms of Stream Health.
- build data on selected reference reaches for Regional application.
- Regional leadership to develop and maintain planning and field tools.
- develop field screening techniques for routine Stream Health evaluations.

#### Planning -

- organize and manage ecosystems within the context of watersheds.
- evaluate transportation alternatives using CWA S404b1 guidelines.
- inventory and assess condition of entire road and trail network.
- anticipate pollution problems using a watershed cumulative effects focus.
- anticipate the scope of an enforcement program in the Record of Decision.
- focus prediction techniques on effects and functions from Table 1.2 that best support advance warning systems within the context of 40 CFR 230.

Table 1.2. Measures of Water Quality - Functions and Effects (33 USC 1314 & 1344)

1. Concentration of pollutants thru physical processes.
2. Dispersal of pollutants thru physical processes.
3. Rates of inorganic sediment accumulation.
4. Eutrophication & organic accumulation rates; pollutant concentration and dispersal through biological and chemical systems.
5. Effects on key species, natural temperature patterns, & dissolved oxygen conditions (food, propagation, cover).
6. Effects on natural stream flow patterns (includes road and corridor effects on reach, flow, and circulation).
7. Effects on aquatic ecosystem stability & diversity.
8. Effects on aquatic ecosystem productivity.
9. Effects on hydrologic cycle and storm runoff.
10. Stream health restoration and recovery rates.
11. Comparison of actual condition to Congressional objectives.
12. Comparison of water samples to State water quality standards.

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- continue development of watershed cumulative effects models.
- continue development of Stream Health evaluations.

#### Implementation -

- commit people and authority to stay on top of high risk activities including construction projects and special use permits.
- summarize the total Watershed Monitoring Program at least every 3 years.
- organize and train field people in simple field screen techniques.
- use evidentiary standard questions as basis for all monitoring efforts.
- routine evaluation of aquatic diversity and productivity.

- concentrate on attitude adjustment and training at field level.
- concentrate on eliminating personal levels of liability.

The point here is that CWA S319 provides the most demanding framework under which to house UFP. And a reflection of the essential detail found in the law, regulations, and case law. This summary is part of T-Walk Part 1 "Legal Framework" and be obtained from either R-2, R-3, or electronically from myself. It is about 50 pages.

One piece of Part 1 has been included here since it relates to the overall problem of reporting watershed condition and aquatic health and compliance with the FS Manual. S319 brings several reporting requirements together and, I believe, would make a solid basis for federal interaction nationwide. Because many NFS lands are also water supply, the review for minimum reporting requirements also included the Safe Drinking Water Act.

CAET will also need to review the official manuals for the other agencies involved to determine if they also create watershed related policy. Although the Federal Highway Administration (DOT) is not on your list, you need to review their material since FHWA regulations apply when federal-aid funds are used. The most demanding FHWA environmental assessments focus on parks and preserves, wetlands and flood plains, and use the CWA S404b1 evaluations. By national policy, the degradation or destruction of special aquatic sites (including pool and riffle complexes - common on NFS) is considered to be one of the most severe environmental impacts and shall be avoided if at all possible. Alternatives that damage special aquatic sites must be able to demonstrate that there are no other less damaging, practicable alternatives (40 CFR 230.1 & .10(a)). FHWA (and COE under CWA S404) is responsible for certifying that projects either comply, comply with additional mitigation, or fail to comply (40 CFR 230.12). A project fails to comply if:

- a) There is a less damaging practicable alternative (40 CFR 230.12).
- b) It causes or contributes to violations of any applicable State water quality standards or toxic effluent standards, jeopardizes threatened or endangered species or critical habitat (T&E), or fails to meet requirements for marine sanctuaries (40 CFR 230.10(b)).
- c) Project causes or contributes to significant degradation and fails to meet CWA S404(b)(2) economic justification (40 CFR 230.10(c)).
- d) Not all appropriate and practicable measures to minimize potential harm have been included (40 CFR 230.10(d) reference to Subpart H).
- e) Lack of information precludes a reasonable judgment (40 CFR 230.12)

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By law, the USFS is authorized to install a transportation system to meet anticipated needs on National Forest System lands on a timely as well as economical and environmentally sound basis (16 USC 1608(a)). Under NFMA, USFS is required to assess the entire network of roads and trails situated on NFS lands, including those under State and County jurisdiction; those covered by valid easements or right-of-ways for non-federal purposes; and the network of old wagon roads, abandoned and still-open temporary roads, two-track, and off-road travel "ways" that may contribute to cumulative effects measured under CWA S404. In addition to CWA S404 "forest road" exemption criteria, several other laws also apply to the construction, operation, and maintenance of highways, roads, and trails and the jurisdiction under which they are used.

Both S319 and S404 are part of the following analysis regarding watersheds.

Appendix - Analysis of Watershed Related Minimum Reporting Criteria  
 (Clean Water Act & Safe Drinking Water Act)  
 (Coryell A. Ohlander - 2/86; revisions 5/88, 1/93, 4/97)

Perspective - cost effective data collection and analysis starts with clearly specified goals and objectives structured in such a way that they highlight the most detailed levels of data analyses normally encountered for either risk assessment or as mandatory or obligatory reports.

The objectives for watershed management listed in FSM 2502 include:

1. To protect and, where appropriate, enhance soil productivity, water quality and quantity, and timing of waterflows.
2. To maintain favorable conditions of streamflow and a continuous production of resources from National Forest System watersheds.

The FSM 2510 Chapter on Watershed Planning includes specific direction --

"To identify and evaluate watershed condition or damage producing events that cause threat to life or property, site deterioration, water pollution, or unsatisfactory water yield, and plan appropriate corrective action on the contributing watershed." (FSM 2510.2)

The relative size of the watershed unit is specified in FSM 2513 Data Management under FSM 2513.2 Watershed Coding (1). The code structure is based on the continued use of primary National Forest Watershed Codes established in the 1960's as part of the Multiple Use Sustained Yield Act and in cooperation with the Water Resource Council. The secondary codes were established during the early 1980's as part of the original planning process mandated by the National Forest Management Act--and designed to meet the analysis requirements listed in 36 CFR 219.23 Water and soil resource. These analyses include water uses, instream flows, water developments, water volumes, impacts from extreme events, compliance to the Clean Water and Safe Drinking Water Acts, watershed conditions (soil productivity, water yield, water pollution, or hazardous events), risk from floods, floodplain values, and wetland protection (2).

Municipal supply watersheds are special protection areas dictated by the Safe Drinking Water Act. These are listed in FSM 2542.3, R2 supplement 50. Separate secondary codes are necessary unless the entire watershed will be managed in manner consistent with the Safe Drinking Water Act (1).

The Rio Grande National Forest plan was the subject of a Federal District Court remand (3). Of particular interest, the Court directed the Forest Service to amend the plan and provide the necessary detail specified by NFMA 36 CFR 219.23, especially 219.23(d) regarding the Clean Water and Safe Drinking Water Acts.

Current experience suggests that, of all the mandates for watershed planning, the CWA S. 319 report, authorized by the Clean Water Act, is the single most demanding and comprehensive report found in the existing legal framework. The report is an amalgamation of several annual and biennial reports regarding both point and nonpoint sources of pollution and abatement programs. The Forest Service has an obligation to provide such information upon request from the state. Input to these reports has, historically, been skimpy; however, the remand reminds the Forest Service of much greater accountability (3 4 5 6 7).

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## STATE (AND EPA) AUTHORITIES

Section 319 was added to the CWA in 1987. CWA creates the authorities for State water quality programs. And subject to minimum federal requirements, states can implement the CWA anyway that they wish - including more stringent requirements.

The States power to interfere with FS land use activities stems from failure to meet state water quality standards and CWA requirements. If a stream is listed as impaired, the State has authority to create programs, including enforcement and compliance programs, to solve the problems. EPA has authority to help the states in many ways; and may, if necessary, disapprove the state's CWA S 319 program. Current lawsuits under CWA S303 relating to Total Maximum Daily Loads (TMDL S303d) is in the process of re-focusing EPA's attention on watershed programs regarding both point and nonpoint pollution.

However, in spite of substantial policy concerning nonpoint pollution concern, EPA does not have authority to actually create or implement a program nor does it have authority to create any form of enforcement. So, unless the state chooses to do so, their nonpoint source program is voluntary and unenforceable. However, there are federal laws that still apply to National Forests and relate to the nonpoint pollution issue; these are described in Part 1 Legal Framework.

CWA S404 is enforceable by both the COE and EPA. Because S404 establishes a federal standard for mandatory BMP's and levels of stream impairment for road related impacts, it is a key piece for both planning and implementation.

## Assessment &amp; Program Reports

CWA S 319 draws together a number of assessment and reporting requirements and makes the State responsible for doing an assessment and building a program to solve the pollution problem(s). States have asked the USFS to participate in their program development and to prepare detailed assessment and program data.

If the state determines that a stream does not meet the standards or CWA requirements, it may then begin discussions as to how the watershed is going to be managed and set the program. The take home lesson is that the Forest Service must now comply with the state's program direction and implementation schedules.

The fact that most states have recently finished their assessments and have started out with brand new and untried programs suggest that, for awhile at least, the state agencies and EPA will be trying to work the kinks out of their administrative procedures and monitoring criteria. The Forest Service needs to actively participate in working out the procedures and criteria so that it is fair, reasonable, and effective in meeting the CWA goals and requirements.

It is also the time to get our own house in order. The absolute first step has to be a commitment to prevent new damage; without that, there is no way to meet any of the legal mandates for National Forests. The second step is to build a restoration program to treat watersheds with stream health problems. The bottom line is that CWA S 319 is pretty clear about the final results and where the power lies; and its not with us.

S 319(a)(1)(A) requires the state to identify those waters that will not meet state water quality standards or the goals and requirements of CWA. Guidance from EPA suggests that these waters will be referred to as "impaired".

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S 319(a)(1)(B) requires the state to identify activities (categories and subcategories) that contribute to the problem of not meeting state water quality standards or CWA goals and requirements. Silviculture is one of these.

S 319(a)(1)(C) requires the state to reduce to the maximum extent practicable the level of pollution resulting from the activities identified in (B). The state has the authority to define maximum extent practicable for each activity.

S 319(a)(1)(D) requires the state to identify and describe pollution control programs including those of federal, state agencies, and local agencies.

S 319(a)(2) provides the state with authority to obtain the information necessary to do the assessment -- including detailed information from the Forest Service.

S 319(b)(1) requires the state to establish a management program for controlling the pollution identified in the assessment.

S 319(b)(2) Program requirements include:

- S 319(b)(2)(A) BMP's and measures that will be used.
- S 319(b)(2)(B) Programs to achieve BMP implementation.
- S 319(b)(2)(C) Annual schedule of program implementation; including the application of BMP's at earliest practicable date.
- S 319(b)(2)(D) State authorities to do the job.
- S 319(b)(2)(E) Sources of federal & other assistance.
- S 319(b)(2)(F) Mandatory federal agency cooperation per EO 12372.
- S 319(b)(3) Includes local & private expertise.
- S 319(b)(4) Programs applied watershed by watershed.

S 319(h)(11) requires the state to provide an annual report of accomplishment in meeting the implementation schedule in (b)(2)(C), the installation of BMP's, calculations of nonpoint source pollutant loading reductions, and water quality improvements for watersheds listed as "impaired".

S 319(d)(2) authorizes EPA to disapprove a state program for these reasons:

- (A) program does not meet requirements of (b)(2) or will not likely satisfy the goals and requirements of CWA; or
- (B) state authority or resources are not adequate; or
- (C) implementation schedules are too slow; or
- (D) practices and measures are not adequate.

In summary, NFMA at 36 CFR 219.23(d) requires forest plans to comply with the Clean Water Act (CWA). Federal law, Executive Order, and Federal Supreme Court Case law requires us to abide by state requirements including S 319 report procedures. CWA grants the states substantial legal authority:

- 1) To determine "impairment" by streams or watersheds.
- 2) To determine what activities are causing the problem.
- 3) To define "maximum extent practicable" for pollution control;
- 4) To determine applicable pollution control programs.
- 5) To apply programs watershed by watershed.
- 6) To establish and run pollution control programs.
- 7) To determine BMP's and measures that will be used.
- 8) To determine earliest practicable date for BMP implementation.
- 9) To prepare annual work schedules.
- 10) To ask for federal grants to do the job.
- 11) To generate annual watershed accomplishment reports.

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CWA S404 WILL-MUST-SHALL

CWA S 404, "Permits for Dredged or Fill Material", is administered by the Army Corps of Engineers (COE) with EPA oversight. CWA S 404 regulates dredge or fill activities and any related discharges into "waters of the U.S.", including "aquatic environment" or "aquatic ecosystem", that are habitat for interrelated and interacting communities and populations of plants and animals. This includes waters and impoundments such as lakes, rivers, streams, intermittent streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; or their tributaries. (40 CFR 230.3(c, & s)).

Federal agencies are subject to S 404 enforcement [(CWA S 404(s)(1) & (3)); S 404(n); (S 208(b)(4)(B)(iv); (S 309(a)(1) & (c)); (33 CFR 323.3(b) & 326]. CWA S 208(b)(4)(B)(iv), in particular, makes the activity subject to termination or modification for violation of any condition of the best management practice.

The COE's jurisdiction is to the ordinary high water mark and to the outer limits of associated or adjacent wetlands (33 CFR 328.1, 328.4(c)). (Ordinary high water mark is established by water fluctuations and indicated by physical characteristics such as a clear, natural line impressed on the bank, no terrestrial vegetation, shelving, or similar indicators (33 CFR 328.3(e)).

There are 3 forms of regulation: situations which claim an exemption, situations for which a general permit is satisfactory, and situations which require an individual site specific 404 permit. Both the exemption and the general permit are only valid if cumulative effects are insignificant and minor. If the impacts are not minor, then an individual permit is required.

In order to claim an exemption, CWA S 404(f)(1) criteria must be met:

- Subsection (A) relates to silvicultural activities;
- " (E) relates to road construction and maintenance activities;
- " (F) relates to all manner of land use activities covered by BMP's.

These exemptions rely on best management practices to control nonpoint source pollution. If effective BMP's can not be achieved, then the exemption disappears and permit regulations apply. Too often projects are approved under the exemption, but mandatory BMP's are not installed because, in the project manager's mind, the extra cost is not justified. This is particularly true for erosion and sediment control measures for road construction and maintenance activities. However, failure to obtain the necessary permits is an act of non-compliance and exposes the Forest Service to the risk of legal action.

The silviculture exemption does not include road construction [33 CFR 323.4 (a)(1)(iii)(B)]. Permanent or temporary roads and skid trails must be constructed and maintained in accordance with mandatory BMP's to assure that flow & circulation patterns and chemical & biological characteristics of U.S. waters are not impaired, that the reach is not reduced, and that any adverse effect on the aquatic environment will be otherwise minimized (S 404(f)(1)(E)).

BMP's are official state pronouncements approved by the EPA under S 208(b)(4), S 304(k)(1), and S 319(b)(2). BMP's must meet minimum non-point pollution control features published as a series by EPA on processes, procedures, and methods (S 303(f)) and those in COE regulations for roads and trails. The FS needs to periodically review these sources to insure FS soil and water conservation practices are equal to or better than these minimum BMP's.

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BMP's must be installed to the "maximum extent practicable" as a requirement of CWA S 319(a)(1)(C) to reduce pollution to the "maximum extent practicable". Practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes (40 CFR 230.3(q)).

Mandatory road and trail BMP's shall include the COE baseline provisions at (33 CFR 323.4(a)(6) paraphrase): limit road & trail system to the minimum feasible number, width, and total length consistent with specific operations, climate, and topography; all roads & trails shall be located sufficiently far from U.S. waters (except for crossings) to minimize discharges; crossings shall be bridged, culverted, or otherwise designed to not restrict expected floods flows; fills shall be properly stabilized and maintained during and following construction to prevent erosion; minimize heavy equipment impacts and vegetative disturbance in "waters" outside construction zone; avoid discharges into ... special aquatic sites (including riffles and pools); ....

EPA guidance required by CWA S 404(b)(1) is at 40 CFR 230. 40 CFR 230.1(c) states that no dredge and fill be discharged unless it can be shown to have no adverse impacts. Discharges are prohibited if other, less damaging practical alternatives are available; or violates state water quality standards, or causes damage to T&E critical habitat (40 CFR 230.10(a) & (b)).

Listings of threatened and endangered species as well as critical habitats are maintained by some individual States and by the U.S. Fish and Wildlife Service of the Department of the Interior (codified annually at 50 CFR 17.11).

"Significant degradation" requires a factual evaluation of potential impacts on physical, chemical, and biological characteristics, special aquatic sites, and on human uses. Significant adverse effects are measured through impacts on municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites; on life stages of aquatic life and other wildlife dependent on aquatic ecosystems; on aquatic ecosystem diversity, productivity, and stability; and the effects may include loss of fish and wildlife habitat, or the loss of the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy (40 CFR 230.10(c)).

USF&WS is formally charged by law (16 USC 661 et seq) with providing detailed guidance regarding pollution effects on fish and wildlife resources including the procedures used in CWA S404. USF&WS has developed and maintained a comprehensive set of Habitat Evaluation Procedures (HEP).

Some measures of aquatic diversity, productivity, and stability include:

- smothering bottom dwelling; destroy habitat (-.20(b))
- primary production, limited growth (-.21(b))
- favoring one group over another (-.22(b))
- location, structure, dynamics of communities (-.23(b))
- communities, populations, nuisance species; reduce food supply, modify habitat; destroy spawning areas, (-.24(b))
- salinity gradient species; M & I water (-.25(b))
- T&E habitat, cover, food supply (-.30(b))
- populations, food web, competition; food supply reduction; tainting, reproduction, trophic energy; productivity, nutrient export (-.31(b))
- bioaccumulation; community structure; indicator and sensitive species; and abundance, diversity, and distribution by substrate (-.61(b) & (c)).

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## WATERSHED RELATED MINIMUM DATA AND ANALYSES

Because stream and lake health, defined specifically and brought to a focus in the CWA S 319 report, are fundamentally dependent on watershed conditions. The preparation for such reports require a fair amount of detail and analysis.

It is this attention to detail that addresses the Court's DIRECTION to amend the Rio Grande National Forest plan to comply with NFMA 36 CFR 219.23(d). This regulation concerns the definition of how the land use plan will achieve compliance with the Clean Water and Safe Drinking Water Acts. The decision comes from the Colorado Federal District Court and is, therefore, binding on the Colorado National Forests and, at least, "persuasive" for the rest of Region 2.

Understanding that CWA S 319 serves as the tip of the iceberg allows data structure and analysis to come into focus -- a cornerstone of any kind of cost effective operation (8). The first stage was to review CWA S 319 and identify all other sections that are incorporated by reference. The results are shown in "Table A Sections Incorporated by Reference in the CWA S 319 Report".

The second stage was to review each section and look for those elements that define the minimum data and analyses needed for the totality of the watershed accounting problem. If two or more sections use the same data or analysis, the section with the most demanding requirements define the standard. The results are shown in "Table B Minimum Data and Analyses Needed by CWA S 319 Report".

The new kid on the block, CWA S 402(p), imposes numerous permit requirements on storm water discharges including those associated with selected industrial and construction activities. Without debating the application of these and other State regulations to National Forest System activities, Table C lists the minimum data and analyses to be incorporated into an NPDES storm water permit.

The third stage was to review each section of the Safe Drinking Water Act and look for elements that define the minimum data and analyses needed as a part of land use planning and watershed accounting. The results are shown in "Table D Safe Drinking Water Act Requirements".

The intent is to combine the requirements of the Safe Drinking Water and Clean Water Acts into a composite list of minimum data and analyses with emphasis on using the most demanding requirements to define the standard. One purpose of the Clean Water Act Monitoring and Evaluation notebook is to organize these standards and define the process for obtaining the information. The "Response Notes" more or less identifies the existing information structure.

For Tables B, C, and D, the column "Response Notes" identifies sources of requests and information, requirements, problems, existing compilations, and report formats that are available (follows Table D). The R2 Clean Water Act Monitoring and Evaluation notebook incorporates Watershed Water Quality Assessment and Monitoring and a procedure for stream health monitoring.

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Table A - Sections Incorporated by Reference in the CWA S 319 Report  
(Clean Water Act -- 33 U.S.C. 1251-1387)

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Section 319 Nonpoint source management programs  
 (a) State Assessment Reports  
 (b) State Management Programs

Section 319 Incorporates by reference the reporting requirements in:

205(j) in S 205 Allotment of grant funds  
 208 & 208(b) in S 208 Areawide waste treatment management  
 303 & 303(e) in S 303 Water quality standards and implementation plans  
 304(f) in S 304 Information and guidelines  
 305(b) in S 305 Water quality inventory  
 S 314 Clean lakes (314(a))  
 EO 12372 regarding obligatory response to state requests.

Section 208, 303, 304(f), 305(b), and 314 incorporates requirements in:

S 201 Congressional declaration of purpose -- 201(c)  
 S 209 Basin planning  
 S 301 Effluent limitations -- 301(b)  
 S 304 Information and guidelines -- 304(a) and 304(k))  
 S 306 National standards of performance  
 S 307 Toxic and pretreatment standards  
 S 316 Thermal discharges  
 S 403 Ocean discharge criteria  
 S 404 Permits for dredged or fill material

Sections 201, 209, 301, 304, 306, 307, 316, 403, and 404 incorporate:

S 203 Plans, specifications, estimates, and payments  
 S 304 Information and guidelines -- 304(b) and 304(l)  
 S 308 Inspections, monitoring, and entry  
 S 309 Federal enforcement  
 S 315 National Study Commission  
 S 402 National pollutant discharge elimination system  
 S 505 Citizen suits  
 S 510 State authority

Sections 203, 304, 308, 309, 315, 402, 505, and 510 incorporates:

S 212 Definitions  
 S 302 Water quality-related effluent limitations  
 S 305 Water quality inventory  
 S 311 Oil and hazardous substance liability  
 S 313 Federal facilities pollution control  
 S 318 Aquaculture  
 S 405 Disposal of sewage sludge  
 S 502 General definitions  
 S 504 Emergency powers

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Table B - Minimum Data and Analyses Needed by CWA S 319 Report  
(Clean Water Act -- 33 U.S.C. 1251-1387)

Section	Minimum Requirements	Response Notes 1/
319 =	best management practices applied and effectiveness	WWQA WCP
	ground water	WWQA SDWA
	enforcement	ROD SDEQ
	waterbodies that fail State water quality standards	SDEQ FSstudy
	waterbodies that fail CWA goals and requirements	SDEQ WWQA PUBL
	biennial reports	Sreq NFMA MOU
	Watershed by watershed program	2513&42 WWQA WWQM
	consistency	Sreq MOU
	monitoring programs	WWQM FSen SDEQ
	watershed and waterbody improvements	WWQA WIN ROD
205(j) =	cost effective analysis of point and non-point	SDEQ WWQA
208 =	urban industrial waste treatment	SDEQ WWQA
	National Wetland Inventory	problem 1
303 =	effluent standards	SDEQ WWQA
	account for severity & uses	SDEQ WWQA
	thermal	SDEQ no action
	TMDL (Total Maximum Daily Load)	SDEQ LawSuits 1997
	cumulative effects	WWQA NEPA WCE
	uses and goals attained or not attained	SDEQ TSTD WWQA
	antidegradation	1-5 WWQA TSTD
304(f) =	pollution guidelines (BMP's equal or better)	S&G problem 2
305(b) =	assistance by Federal agencies (mandatory)	recognized MOU
	point source inventory	WWQA FFCP
	waterbody health inventory & goal attainment	WWQA TSTD
	analysis of point source clean up	SDEQ FFCP
	pt source clean-up envirnmtl cost & benefit	WIN PLAN FFCP
	" " " " social cost & benefit	FFCP WIN
	" " " " economic cost & benefit	FFCP WIN
	nature & extent of nonpoint sources	WWQA TSTD
	nonpoint clean-up recmds, costs, & benefits	WIN PLAN
314 =	eutrophic conditions of lakes and ponds	SDEQ problem 3
	land use requirements to protect or restore	TSTD S&G PLAN
	methods and procedures to protect and restore	SDEQ S&G WWQA
	list & description of waterbodies	SDEQ problem 4
	specified pollution control programs	SDEQ problem 5
EO-12372 =	obligatory response to state requests.	recognized MOU
201c =	area wide analysis of point & nonpoint sources	WWQA
	accumulated sources	WWQA
209 =	WRC basins with reference to level B plans	PLAN problem 6
301b =	effluent discharge effects on:	EPA T1.3
	bioaccumulation, persistency, toxicity	EPA T1.3
	synergistic propensities	EPA T1.3
304a =	kind & extent of pollution	SDEQ WWQA PLAN
	impacts on plankton,	EPA no action
	" " fish,	HEAL WWQM WALK
	" " shellfish,	EPA no action
	" " wildlife,	EPA problem 7
	" " plant life,	EPA problem 7
	" " shorelines and beaches,	EPA problem 7

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" " esthetics & recreation;	EPA problem 7
concentration & dispersal through biological,	EPA problem 8
" " " physical,	WWQA WWQM WALK
" " " chemical.	EPA problem 8
effects on biological community diversity,	WWQM HEAL WALK
" " " productivity,	WWQM HEAL WALK
" " " stability,	WWQM HEAL WALK
factors on eutrophication,	EPA problem 9
rates of organic sedimentation	EPA no action
rates of inorganic sedimentation,	WWQM HEAL WALK
varying types of receiving waters.	EPA SDEQ WALK
Factors to restore & maintain;	EPA SDEQ WIN
" protect & propagate;	HEAL WALK
" measure & classify;	HEAL WALK
Identify pollutants suitable for TMDL approach	SDEQ LAWSUIT 1997
biological assessment	TSTD RBAP WALK
304k = agreements w/ SecAg	nps strategies
307 = Tbl 1 Committee Print 95-30.	SDEQ FSstudy
316 = thermal, point source thermal	SDEQ WALK
404 dredge & fill permits (compliance)	404AP 404GN
flow & circulation patterns not impaired	404EX
chem & bio characteristics not impaired	404EX FSstudy
road effects	404EX FSstudy
wetland determination	COE problem 10
304 = lake restoration guidance manual;	get copy
304b = revision of pt control technology.	SDEQ
308 = monitoring point sources.	WWQM FSen
402 = NPDES:	SDEQ
permit compliance & termination;	FSen
stormwater runoff & discharges	SDEQ FSeg SWRO
significant contributions of pollutants	WWQM SWRO WALK
505 = citizen lawsuits.	OGC
temporary restraining order & pre injunction	OGC
evidentiary standards	OGC WWQM 1-11
302 = specific portions (reaches) --	SDEQ RRF_ WWQA
beneficial uses (list)	SDEQ WWQA
public health	SDEQ SDWA FSen
agricultural and industrial uses	SDEQ WWQA
balncd popltn of shellfish, fish, & wildl	HEAL
recreation.	SDEQ no action
311 = oil & hazardous	SDEQ WWQA EMER
contingency plan.	EMER PLAN
313 = federal facilities compliance:	FFCP MOU?
property or facilities	FFCP WWQA
runoff or discharge	WWQA WWQM FFCP
405 = sludge disposal:	SDEQ WWQA FSen
toxicity, persistence, mobility, exposure	T1.3
acceptable management practices	SDEQ WWQA
504 = imminent & substantial health endangerment	SDEQ T1.3

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 1/ Response notes and abbreviations follow Table D.  
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Table C -- Stormwater Runoff Data & Analysis -- CWA S 402(p)  
(CWA 40 CFR 122 Stormwater Discharge NPDES)

Section	Minimum Requirements	Response Notes
40 CFR 122.26	Storm water discharge (NPDES related)	FFCP FSen
(c)(1)	= applications INDIVIDUAL.	FFCP FSen
ii	= Construction (122.26(b)(4)(x))	FFCP FSen
	Name of receiving water	SDEQ RRF_
	map & location (1:10000 to 1:24000 topo)	ROD
	nature of activities and area disturbed	ROD
	construction & post constructn contrl measures	ROD
	Best Management Practices	ROD PLAN
	local erosion & sediment control reqrmt	ROD PLAN
	estimate of runoff coefficient	ROD RCN 2-12
	estimate of impervious area increases	ROD RCN 2-12
	nature of the fill material (describe soil)	ROD
(c)(2)	= applications as group GENERAL permit	PLAN
i	= Applicants, activities, abatement, support data	PLAN
(d)(1)	= Municipal (med & large) (Part 1)	2542 problem 11
iii B	= sources: map (7.5' 1:10000 to 1:24000)	IRI WWQA
2	land use existing & next 10 years	WWQA PLAN ROD
	include runoff coeff for each land use	RCN
3	operating & closed landfills & disposl sites	WWQA PLAN
4	location & # of NPDES permits	SDEQ
iv	= Discharge characterization	SDEQ
A	= mean monthly ppt & number of storm events	SDEQ
B	= outfalls -- volume & quality (list sample pts)	SDEQ
C	= water body list receiving discharges (S 319)	SDEQ
D	= Field screen (odor, oil, scum, turbidity)	WALK
	population, traffic & road density	SDEQ PLAN
	age of structural works, history, land use	SDEQ PLAN
v	= Mgt programs to control pollution	SDEQ S&G PLAN
(d)(2)	= Part 2 of Municipal Applicatn	2542 problem 14
	interagency agreements	2542
ii	= Source identification. Inventory by watershed:	SDEQ WWQA
iii	= Characterization data: "quantitative data"	LOAD FSstudy
A	= drainage area, location & # of outfalls	SDEQ WWQA
iv	= Impose controls on a ... watershed basis ...	SDEQ WWQA
A	= structural and source control	SDEQ S&G
	maintenance activities & schedules	S&G
	identify planning process to reduce pollutnt	NFMA PLAN MOU
	construction site pollution control	ROD S&G PLAN
	public streets, roads, highways.	S&G FSen PLAN
	procedures to reduce stream impacts	S&G FSen PLAN
	de-icers, pesticides, herbicides, fert	WWQA WWQM
B	= pipe flush, land irrigation, stream diversion	SDEQ S&G WWQA
	rising ground water,	SDEQ
	uncontaminated ground water infiltration	SDEQ
	flows from riparian habitats and wetlands	PLAN
	procedures for on-site field screening	WALK
	emergency response to spills	EMER
C	= landfills, disposal, RCRA, SARA	EPA SDEQ WWQA
D	= maintain structural & nonstructural BMP's	S&G PLAN WALK

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Table D - Safe Drinking Water Act Requirements			
(Public Health Service Act, Title XIV. 42 U.S.C. 300f-300j-26)			
Section	Minimum Requirements	Response Notes	
300f	Definitions		
	public water system: (15 connections or 25 people)	2542	
	Rural Water Survey - (quan, qual, & avail; SecAg)	PLAN	compare
300g-2	State primary enforcement responsibility	SDEQ	
	(a) monitoring and records	SDEQ	FSen
300g-3	Enforcement of drinking water regulations	SDEQ	
	(f) earliest feasible time	EMER	
	maximum feasible protection	EMER	PLAN
300h-6	Sole source aquifer demonstration program	SDEQ	
	(a) protect critical aquifer protection areas	SDEQ	2542 PLAN
	(b) ground water quality protection plan (CWA S 208)	SDEQ	PLAN
	(d) criteria:	SDEQ	EPA
	vulnerability	WWQA	WWQM
	population using a ground water source	2542	PLAN
	comprehensive mgt plan for critical protection area	2542	PLAN
	natural vegetative and hydrogeological conditions	NFMA	PLAN
	ground water flow, recharge, and discharge	GEOL	problem 12
	existing anthropogenic contaminant sources	WWQA	SDEQ
	potential anthropogenic contaminant sources	WWQA	WCE NEPA
	detailed map of boundaries	IRI	PLAN
	point and nonpoint sources of degradation	TSTD	WWQA WIN
	relationship of activities to ground water quality	problem 13	
	practices to be implemented	WWQA	PLAN ROD
	authorities to implement	SDEQ	PLAN ROD
	special protection area watershed	2542	PLAN ROD
	federal activity contribution to degradation	TSTD	WWQA WWQM
	" " " " infiltration loss	WWQA	WWQM RCN
	emergency contingency planning	PLAN	EMER
	no adverse impacts on WQ & recharge capabilities	S&G	PLAN WALK
	pollution abatement measures	SDEQ	WWQA WIN
300h-7	State programs to establish wellhead protection areas		
	(a) wellhead protection area	2542	PLAN ROD
	(h) compliance - federal agencies with jurisdiction	S&G	PLAN
	(i) oil and gas well injection	SDEQ	WWQA S&G
	(j) coordination with water rights	PLAN	
300j-1	Research, technical assistance, information, training		
	(a) sources of such contamination	WWQA	problem 13
	sources of water supplies	2542	
	responding to emergency situations	EMER	WALK
	abandoned injection or extraction wells	WWQA	WWQM
	pesticides and fertilizers	WWQA	WWQM
	surface contaminants - pools, pits, lagoons, ponds	WWQA	WWQM
300j-4	Records and inspections	Sreq	FSen MOU
	(b) including raw water sources	problem 14	
300j-9	(h) report each year	SEDQ	PLAN MOU
300j-13	Source water quality assessment (1996 amdmts)	WWQA	SDEQ PLAN
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## Response Notes and Abbreviations

1-5        = \* Antidegradation. CWA Monitoring & Evaluation, Part 1 page 5.  
 1-11       = \* Evidentiary standards. CWA Mon & Eval Part 1 page 11.  
 2-12       = \* Storm runoff discussion. CWA Mon & Eval page 2-12.  
 2513       = \* FSM 2510 Watershed Planning; 2513 Data Management.  
 2542       = \* FSM 2542 Municipal Supply Watersheds (list at R2 supp 50).  
 404AP      = S404 dredge and fill individual permit application.  
 404EX      = S404 permit exemption criteria - mandatory BMP's and no impairment.  
 404GN      = S404 dredge and fill general permit.  
 COE        = Corp of Engineers, 404 program.  
 EMER       = Emergencies and contingency planning (including chemical spills).  
 EPA        = Environmental Protection Agency has oversight on CWA and SDWA.  
 FFCP       = Federal Facilities Compliance Program. Engineering.  
 FSen       = Forest Service engineering  
 FSstudy    = FS special studies in cooperation with other agencies.  
 GEOL       = Hydrogeology and ground water information. Geologic information.  
 HEAL       = \* Stream health definitions. CWA Mon & Eval. Page 1-8ff.  
 IRI        = Integrated Resource Inventories with GIS and databases.  
 LAWSUIT    = Lawsuit filed against EPA re: TMDL (S303d).  
 LOAD       = organic pollutants (Tbl 2 & 3 Apx D 40 CFR 122), TSS, TDS, COD, BOD(5), oil & grease, fecal coliform & streptococcus, pH, total Kjeldahl nitrogen, nitrate, nitrite, total ammonia plus organic nitrogen, total & dissolved phosphorus. Include description of models, data analysis, and calculations used.  
 MOU        = MOU between State water quality agencies and Region 2.  
 MOU?       = Don't know if current MOU with state covers this item.  
 NEPA       = National Environmental Policy Act. EIS/EA process.  
 NFMA       = National Forest Management Act regulations control NFS planning.  
 no action = no action and no apparent problem yet  
 nps strategies = Non-point source task force agreements w/ Forest Service 1985.  
 OGC        = Office of General Council  
 PLAN       = Forest Plan and Record of Decision that implements the plan.  
 PUBL       = Public input and petition to State water quality agencies.  
 RBAP       = Rapid Bio Assessment Protocols for diversity. (EPA materials).  
 problem    = not now getting the job done. See list below.  
 RCN        = Runoff Curve Number methodology. SCS Hydrology.  
 ROD        = Record of Decision supported by EA/EIS as required by NEPA.  
 RRF        = River Reach File 2 and 3. In use by States for S 319 data base.  
 S&G        = Forest Service Standards and guidelines. Watershed Conservation Practices handbook FSH 2509.25-96-1 (Part 5)  
 SDEQ       = State water quality agencies.  
 SDWA       = \* Safe Drinking Water Act authorities.  
 Sreg       = \* State requests for information; mandatory cooperation.  
 SWRO       = Storm Water Runoff. New regs for NPDES sites.  
 T1.3       = \* Table 1.3 Summary of Serious and Complex Pollution Problems.  
 TSTD       = \* Stream standards assigned as reference reaches (T-Standards)  
 WALK       = \* Thalweg - Watershed Area Link (T-Walk) monitoring procedures.  
 WCE        = \* Watershed Cumulative Effects; re NEPA process with WWQA as basis.  
 WCP        = \* R-2 Watershed Conservation Practices handbook FSH 2509.25-96-1.  
 WIN        = Watershed Improvement Needs inventory. (in FSM 2522).  
 WWQA       = \* Watershed Water Quality Assessment. Summary and detail.  
 WWQM       = \* Watershed Water Quality Monitoring. Staff officer summary

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 \* Combined in Clean Water Act Monitoring and Evaluation notebook.

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## List of problems:

- 1 National Wetland Inventory. Fish & Wildlife Service responsibility. FS inventory done for NFMA needs to be comparable to F&WS NWI. Several appeals have already picked up on the general incompatibility.
- 2 EPA was directed to establish state-of-the-art in pollution control for major categories of activities. Standards and guidelines for soil and water conservation practices need to be compared with the documents to see if they are equal to or better.
- 3 Lake and pond inventories for S 314 need to be done. Consistency is a key factor. Check on Western Lakes Survey materials.
- 4 Need to locate and review current lists of lakes and ponds used by the state in past 304b and 319 reports.
- 5 Appears that S&G's in current Forest Plans do not address lake health problems. Need a review for what might make a good protection program.
- 6 Forests need to get the appropriate level B studies and review for CWA related material on water quantity and quality issues.
- 7 Pollution impacts on wildlife and plant life: no action taken including definition of the problem.
- 8 Looks like research level problem; there has been no R2 effort at definition or literature search.
- 9 Fair idea of the basic problem from nutrient loading. There has been only minor R2 effort of defining factors and relating it to land uses.
- 10 Jurisdictional wetlands. Notify COE for projects in wetland areas (may request 6"/mile or 8"/mile project maps). Common 1:15840 aerial photos.
- 11 While the Forest Service itself will not apply for such a permit, it is likely to be a cooperator in any number of such applications, especially for those watersheds listed in FSM 2542.
- 12 Few hydrogeology studies are available on National Forest Lands.
- 13 Need to know the relationships between activities in WWQA and impacts in ground water. First cut would be a review of existing EPA publications.
- 14 Not much has been done on public water supply watersheds to evaluate sources and conditions.

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## NOTES and REFERENCES

- 1 FSM 2513.2 standardizes an 11 character watershed coding: levels 1 to 4 for Hydrologic Unit Code (8 digits); level 5 (2 digits) for major National Forest and Grassland watersheds (FSM 2513.2 R2 supplement 50); and level 6 (1 character) for subdivision. NFS specified watersheds consist of 3 characters, i.e. 12B, and are more or less 4th order watersheds.  
Watershed code scheme is manual policy; apply the logic that the policy watersheds reflect the level of accounting to be used in meeting the NFMA requirements specified by the remand in 36 CFR 219.23 & 36 CFR 219.23(d).  
Municipal Supply Watersheds (FSM 2542.3 R2 #50) are special protection areas under the Safe Drinking Water Act and need to be identified as such.
- 2 NFMA 36 CFR 219.23 Water and soil resource (paraphrased) states that Forest Planning shall provide for (a) estimates of current water use, including instream flows; (b) identification of significant impoundments, transmission facilities, wells, and other man made developments; (c) estimates of the probable occurrence of various levels of water volumes; (d) compliance with the Clean Water Act, Safe Drinking Water Act, state and local requirements; (e) evaluation of existing or potential watershed conditions that will influence soil productivity, water yield, water pollution, or hazardous events; and (f) adoption of measures to minimize risk of flood loss, to restore and preserve flood plain values, and to protect wetlands.
- 3 Rio Grande National Forest plan was remanded (Citizens for Environmental Quality v. U.S. 731 F.Supp. 970 (D.Colo 1989)). Federal case law directs forest plan to correct (among other things) for failure to address several watershed issues:
  - failure to identify the technology that would be employed to prevent irreversible damage to soil resources; otherwise, the land is unsuited because timber harvest creates irreversible resource damage to soils productivity and/or watershed conditions. (NFMA 36 CFR 219.14(a)(2)).
  - failure to address compliance with Clean Water Act (36 CFR 219.23(d)).
  - failure to obtain and use current information (NFMA 36 CFR 219.12(d)).
- 4 NFMA 36 CFR 219.12(d) The Supervisor will assure that the interdisciplinary team has access to the best available data. The interdisciplinary shall collect, assemble, and use data, maps, graphic material, and explanatory aids, of a kind, character, and quality, and to the detail appropriate for the management decision to be made. .... Data and information needs may vary as planning problems develop from identification of public issues, management concerns, and resource use and development opportunities.
- 5 EPA's Forest Plan water quality review checklist (11/5/85).  
EPA letter to Greybull District Ranger re water quality (10/16/87).  
" " " Shoshone National Forest re water quality (8/7/87).  
" " " Shoshone National Forest detailed comments (8/7/87).  
" " " Grand Mesa, Uncompahgre, and Gunnison NF (9/24/87).  
" " " Black Hills National Forest re water quality (12/8/87).
- 6 Plan scoping (NEPA 40 CFR 1501.7) identifies significant issues; defined in part as those likely to be controversial (NEPA 40 CFR 1508.27(b)(4) or those likely to threaten a violation of Federal, State, or local law or requirement. Water quality and stream health issues are nearly always significant issues from land disturbing activities.

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- 7 NFMA 36 CFR 219.12(k) requires evaluation of how well the objectives are being met; requires documentation of effects, including significant changes in productivity of the land (generic sense also includes waters).
- 8 Other benefits likely to accrue to planning include:
- a rationale and basis for watershed cumulative effects (i.e. Shoshone);
  - watershed restoration and accounting for restoration benefits;
  - routine responses to the States regarding water quality;
  - a positive response to EPA regarding water quality (FS/EPA issue list);
  - simple database screens for priority watersheds;
  - both watershed condition and stream health contribute to development of project plans and the field information can be used directly to update the watershed file; project monitoring would then have a double purpose;
  - a great deal of time and money can be saved because monitoring is focused DIRECTLY on the stream health question rather than on "recommended" water quality parameters that may or may not be useful;
  - spin-off to other disciplines like wildlife that find road density, stream bottoms, and ridge tops useful ecological information.

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Looking at the Response Columns, the abbreviation for Watershed Water Quality Assessment (WWQA) resulted in a particular format and table that combined a review or activities with the notion of BMP's built into three classes: safeguarded, at-risk, and failure. The 6 stream health classes are summarized as miles per health class within the watershed. A lot of time was spent with both EPA and the State staffers to make something that would meet their needs. My recommendation is for CAET to start from this point and build on it. The summary table is built on a one page format. And the detail table on two pages. I suggest that such a structure is doable whereas very complex computer data basis that measure everything in sight never get the job done.

The activities list was developed, in part, from EPA's 1974 effort to anticipate serious and complex future pollution problems. (Flinn, J. and R. S. Reimers. 1974. Development of Predictions of Future Pollution Problems. Battelle Columbus Laboratories. EPA 600/5-74-005). Their composite list featured these 10: Impacts of New Energy Initiatives, Geophysical Modification, Trace Element (mainly heavy metal) Contaminants, Proliferating Hazardous and Toxic Chemicals, Emissions from New Automotive Fuels, Additives, and Control Devices; Disposal of Waste Sludges, Liquids, and Solid Residues; Critical Radiation Problems; Fine Particulates; Expanding Drinking Water Contamination; Irrigation (Impoundment) Practices. The intent was to capture these water pollution sources in addition to the normal land use activities.

The second major effort was to tie the link with watershed cumulative effects including those described by S404 regs at 40 CFR 230. Instructions for filling out the table (courtesy Shoshone NF) work at District level. Interpretations of stream health are done at SO level.

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## WATERSHED WATER QUALITY ASSESSMENT

"The Committee wants to know what waters are in their natural state and where they are located. The Committee wants to know what waters are of the quality which will assure protection and propagation of fish, shellfish, and wildlife. .... The Committee wants information on those waters which fail to meet high quality requirements, where they are located, and the reason for the failure." [3722 USCC&AN 1972].

This quote is the bread and butter of the Watershed Water Quality Assessment and Monitoring efforts. The overriding objectives are to reduce vulnerability to personal liability and litigation, reduce loss of resource capital, reduce restoration costs, and reduce loss of future management options.

Since the Clean Water Act is an accountable managerial function, the assessment of Stream Health is a key item and reflects a 'bottom-line' measure of how current conditions stack up against the legal goal of ecological integrity.

**Watershed Cumulative Effects**

The Clean Water Act makes a good and legally supportable foundation for watershed cumulative effects analysis as discussed in Part 1. The concepts necessary to make the translation from the Clean Water Act to a suitable NEPA analysis are already in place and well supported by the regulations; the concepts are summarized as follows:

- a Watershed cumulative effects equates to prediction of future effects as measured against the antidegradation provision of the Clean Water Act and includes all beneficial aspects of watershed hydrologic functioning and land productivity.
- b Cumulative effects are those conditions that do not allow maintenance of ecological integrity. Maintenance of ecological integrity requires that any changes ... be of a temporary nature, such that by natural processes, within a few hours, days, or weeks, the aquatic ecosystem will return to a state functionally identical to the original. [3742 USCC&AN 1972].
- c Geomorphic equilibrium between sediment transport and stream power is a necessary and major condition of physical integrity as defined by the Clean Water Act. Therefore; upsets in equilibrium for whatever reason create cumulative effects as defined in the NEPA context.
- d A stream channel has a limited tolerance to changes in geomorphic processes. Channel cutting or filling, stream bank erosion, increased rates of mass wasting, and a shift toward wider or shallower channels are indicators of geomorphic upset or disequilibrium (26 27). These constitute long term adverse cumulative effects.
- e For a selected hydrologic event, the risk of upsetting geomorphic equilibrium and initiating adverse watershed cumulative effects accelerates as watershed disturbance increases.
- f Stream channels are part of the land and managed under legislation that includes "securing favorable conditions of water flows". Changes in this favorable condition are by definition 'significant;' they can not be called 'insignificant' in order to avoid the necessary mitigation.

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## WATERSHED WATER QUALITY ASSESSMENT - Summary

Date: \_\_\_\_\_

HUC Cat #: \_\_\_\_\_ NFS Wshed#: \_\_\_\_\_ Watershed: \_\_\_\_\_

Natl For: \_\_\_\_\_ District: \_\_\_\_\_ Progm Officer: \_\_\_\_\_

Management Situation: \_\_\_\_\_

Stream Health Watershed Summary (class, CWA stream miles, comments)			
	<u>Total miles</u>	<u>NFS miles</u>	<u>Project Status</u> (monitoring or restoration plans)
Robust	: _____ mi	_____ mi	_____ !
Adequate	: _____ mi	_____ mi	_____ !
Diminished	: _____ mi	_____ mi	_____ !
Impaired	: _____ mi	_____ mi	_____ !
Precarious	: _____ mi	_____ mi	_____ !
Catastrophic	: _____ mi	_____ mi	_____ !

Watershed Summary - Water Pollution Sources						
	!	Total	!	National Forest System Lands		
Land & Water Operations	unit	Quantity	!	Quantity	Safeguard	At-Risk ! Failure !
<u>Geophysical Modification</u>						
Agriculture	ac	_____ !	_____ !	_____ !	_____ !	_____ !
Corridors	mi	_____ !	_____ !	_____ !	_____ !	_____ !
Deforestation	ac	_____ !	_____ !	_____ !	_____ !	_____ !
Heavy use sites	ac	_____ !	_____ !	_____ !	_____ !	_____ !
High hazard lands	ac	_____ !	_____ !	_____ !	_____ !	_____ !
Mining, milling, & mfg sites	ac	_____ !	_____ !	_____ !	_____ !	_____ !
Roads & trails	mi	_____ !	_____ !	_____ !	_____ !	_____ !
Silviculture	ac	_____ !	_____ !	_____ !	_____ !	_____ !
Water collection/transfer	mi	_____ !	_____ !	_____ !	_____ !	_____ !
Water storage surface	ac	_____ !	_____ !	_____ !	_____ !	_____ !
Wetlands & Riparian altered	ac	_____ !	_____ !	_____ !	_____ !	_____ !
<u>Chemical Contamination</u>						
Bulk transport routes	mi	_____ !	_____ !	_____ !	_____ !	_____ !
Energy production sites	ea	_____ !	_____ !	_____ !	_____ !	_____ !
Land use application	ac	_____ !	_____ !	_____ !	_____ !	_____ !
Natural non-point	ac	_____ !	_____ !	_____ !	_____ !	_____ !
Point sources	ea	_____ !	_____ !	_____ !	_____ !	_____ !
Residue disposal - tox/haz/rad	ea	_____ !	_____ !	_____ !	_____ !	_____ !
Solid waste landfill	ea	_____ !	_____ !	_____ !	_____ !	_____ !
Tailings & Spoil banks	ac	_____ !	_____ !	_____ !	_____ !	_____ !

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## WATERSHED WATER QUALITY ASSESSMENT

Potential water pollution sources are summarized; this is a starting point for monitoring and corrective action, and "pre-project" conditions for watershed cumulative effects analysis. Results are summarized for the watershed in miles by Stream Health class for CWA waters. There are 2 forms: summary and detail.

Date. Month and year is enough.

HUC Cat #. USGS Hydrologic Unit Code Cataloging Unit is used to help States summarize water body health conditions through state biennial reporting systems (i.e. S305b and S319). Federal and state agencies also use it for reporting fire control efforts and water resource data.

NFS Wshed # and Watershed. NATIONAL FOREST/GRASSLAND WATERSHED code and name (for database).

Natl For. & District. National Forest/Grassland and District administrative unit names allow normal follow-up for questions and program coordination. Each District reports on its own administration. Program Officer. Person with managerial responsibility for the watershed program and public contacts.

Management Situation. Focus on activities or conditions that need emphasis such as existing land use conditions; emergency fire, flood, or drought conditions; extensive road construction; or new permits.

Stream Health Watershed Summary. Think specifically and assign each and every CWA stream mile to one of the classes. The Total miles account for all streams in the system; the NFS miles just account for streams under NFS responsibility. Count miles subject to State water quality standards; build agreement with the State and other federal agencies on the total miles. Use map scale of 1:24000.

The goal is to have all stream miles in the Robust and Adequate Health Classes. The difference between "pre-project" and "project" can be used to identify components that help tie monitoring and restoration plans into a comprehensive effort to bring water quality up to the necessary standards.

Watershed Summary - Water Pollution Sources. Tabulate from Watershed Detail - Water Pollution Sources.

Land & Water Operations. Major activities/surface conditions often associated with water pollution.

unit. acres, miles, counts (each); unit applies to all cross columns.

Total Quantity. Tabulation from Watershed Detail tables; based on Map scale 1:24000 or field reports.

National Forest System Lands. NFS responsibility; include special uses, easements, ROWs, etc.

Quantity. Total of safeguarded, at-risk, and failure categories.

Safeguard. Sites are protected with BMPs (for design storm) and in full CWA compliance. May include protection by watershed conservation practices, permanent vegetative buffers, proper landing location, riparian fencing, temporary sediment traps, chemical treatment plants, or dam operations. Includes aggressive BMP administration, inspection, contract enforcement, and corrective action.

Forest and range in Good (vege RCN) hydrologic condition (based on potential of good hc).

At-Risk. Sites are not fully protected from design storm. Water quality impacts expected from current activities, or where response times can not be met under emergency conditions, or erosion control efforts are lax, or administrative resources are not allocated to stay on top of high risk situations, -- are all examples of sites and management situations that are at-risk.

Forest and range in Fair (vege RCN) hydrologic condition (based on potential of good hc).

Failure. Water quality impacts are apparent. BMPs either ineffective or not installed. Connected Disturbed Area (CDA) is obvious or sites typically release pollutants directly into stream network.

Forest and range in Poor (vege RCN) hydrologic condition (based on potential of good hc).

Unit & tag. Acres, miles, or counts (each). Use the [ ] to tag which items refer to the site. For example, you might list 4 separate gold mines in an area that are all "abandoned metallic sites".

Site Identification & Location. Essential to have an exact name and location for each and every source. Think in terms of specifics; then the information collected for each site will improve plans and accomplishment reports. When sites have been restored and Stream Health actually improved, make sure the changes are documented and carried forward to the biennial (S305b or S319) watershed reports to the States. Administratively, it is easier to make updates from specific site information regardless if the database is paper and map or electronic and GIS.

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## Watershed Detail - Water Pollution Sources

Date: \_\_\_\_\_

HUC Cat #:	NFS Wshed #:	Watershed:			
=====					
Land & Water Operations	unit !	Watershed Totals			! Site Identification and
	& tag !	All !	National Forest System	!	Location (T,R,S,qtr,qtr)
		Ownrs !	Safegrd : At-risk !	Failure !	
-----					
<u>GEOPHYSICAL MODIFICATION</u>					
Agriculture	ac !	!	:	!	!
Irrigated crops	[ ]	!	:	!	!
Dryland crops	[ ]	!	:	!	!
Rangeland	[ ]	!	:	!	!
Woodland	[ ]	!	:	!	!
Corridors	mi !	!	:	!	!
Buried pipelines	[ ]	!	:	!	!
Canals & ditches	[ ]	!	:	!	!
Deforestation	ac !	!	:	!	!
Forest to burn	[ ]	!	:	!	!
Forest to grass	[ ]	!	:	!	!
Brush to grass	[ ]	!	:	!	!
Heavy use sites	ac !	!	:	!	!
Outdoor recreation	[ ]	!	:	!	!
Residential/business	[ ]	!	:	!	!
Rural subdivision	[ ]	!	:	!	!
High hazard lands	ac !	!	:	!	!
Chronic wind erosion	[ ]	!	:	!	!
Severe O.M. & nutrient loss	[ ]	!	:	!	!
Mass failure: active	[ ]	!	:	!	!
"High" hazard potential	[ ]	!	:	!	!
"Moderate" hazard potential	[ ]	!	:	!	!
Gullies & severe sheet erosn	[ ]	!	:	!	!
Mining, milling, & mfg sites	ac !	!	:	!	!
Active metallic sites	[ ]	!	:	!	!
Active non-metallic sites	[ ]	!	:	!	!
Abandoned metallic sites	[ ]	!	:	!	!
Abandoned non-metallic sites	[ ]	!	:	!	!
Roads & trails	mi !	!	:	!	!
Asphalt roads	[ ]	!	:	!	!
Aggregate roads	[ ]	!	:	!	!
Graded (ditch; no aggregate)	[ ]	!	:	!	!
Waterbar/roll (no ditch)	[ ]	!	:	!	!
Temporary roads	[ ]	!	:	!	!
Off-road trails	[ ]	!	:	!	!
Primitive (no maintenance)	[ ]	!	:	!	!
Silviculture	ac !	!	:	!	!
Regen, no hydrologic recovery	[ ]	!	:	!	!
Regen, < 1/4 hydrlic recvry	[ ]	!	:	!	!
Regen, 1/4 to <1/2 h.recvry	[ ]	!	:	!	!
Regen, 1/2 to <3/4 h.recvry	[ ]	!	:	!	!
Regen, 3/4 & > hydrlic recvry	[ ]	!	:	!	!
Salvage operations	[ ]	!	:	!	!
Non-regenerated	[ ]	!	:	!	!
Water collection/transfer	mi !	!	:	!	!
Stream flow decreased	[ ]	!	:	!	!
Stream flow increased	[ ]	!	:	!	!
Historic channel "drives"	[ ]	!	:	!	!
Historic flood effects	[ ]	!	:	!	!
Operations, spills, & flush	[ ]	!	:	!	!
Channelized/straightened	[ ]	!	:	!	!

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**Watershed Detail - Water Pollution Sources (p 2) Watershed:**

Land &amp; Water Operations unit&amp;tag ! Total ! Sfgd-NFS- AtRisk -Failure ! Site ID and Location

Water storage surface	ac !	!	:	!	!
Natural lakes & ponds	[ ]	!	:	!	!
Stockponds	[ ]	!	:	!	!
Impound w/ permanent wtr lvl	[ ]	!	:	!	!
" w/ seasonl drawdown	[ ]	!	:	!	!
" w/ rapid fluctuation	[ ]	!	:	!	!

Wetlands & Riparian altered	ac !	!	:	!	!
Water level lowered	[ ]	!	:	!	!
High water table induced	[ ]	!	:	!	!
Sites filled or drained	[ ]	!	:	!	!
Tree cover reduced/removed	[ ]	!	:	!	!
Brush cover reduced/removed	[ ]	!	:	!	!
Soil infiltration reduced	[ ]	!	:	!	!

**CHEMICAL CONTAMINATION**

Bulk trnspt (haz/tox) routes	mi !	!	:	!	!
Highway	[ ]	!	:	!	!
Pipeline	[ ]	!	:	!	!
Railroad	[ ]	!	:	!	!

Energy production sites	ea !	!	:	!	!
Oil & gas wells	[ ]	!	:	!	!
Abandoned well sites	[ ]	!	:	!	!
Coal & lignite mines	[ ]	!	:	!	!
Geothermal & oil shale	[ ]	!	:	!	!

Land Use application	ac !	!	:	!	!
Aerial spray	[ ]	!	:	!	!
Ground spray	[ ]	!	:	!	!
Slow release pellets	[ ]	!	:	!	!
Residual persistent biocides	[ ]	!	:	!	!

Natural non-point	ac !	!	:	!	!
Saline leach & erosion areas	[ ]	!	:	!	!
Mineralized seeps & springs	[ ]	!	:	!	!
Erosion of mineral deposits	[ ]	!	:	!	!

Point sources	ea !	!	:	!	!
Chemical discharge/fumes	[ ]	!	:	!	!
Burning/exhaust fumes	[ ]	!	:	!	!
Mine tunnel/adit drainage	[ ]	!	:	!	!
Haz/toxic chemicl mixing site	[ ]	!	:	!	!

Residue disposl -tox/haz/rad	ea !	!	:	!	!
Container disposal site	[ ]	!	:	!	!
Accidental spills & clean-up	[ ]	!	:	!	!
Pollution control sludges	[ ]	!	:	!	!
Metal mine/mill sludges	[ ]	!	:	!	!

Solid waste landfill	ea !	!	:	!	!
Unregulated dumping	[ ]	!	:	!	!
Residential/business	[ ]	!	:	!	!
Industrial/Agricultural wastes	[ ]	!	:	!	!
M & I treatment sludge	[ ]	!	:	!	!
Waste oil & spill disposal	[ ]	!	:	!	!
Abandoned dumps	[ ]	!	:	!	!

Tailings & spoil banks	ac !	!	:	!	!
Coal/lignite/spent shale	[ ]	!	:	!	!
Dredge/strip mine	[ ]	!	:	!	!
Radioactive sites	[ ]	!	:	!	!
Mineral mine & mine tailings	[ ]	!	:	!	!

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Storm runoff is a major part of watershed cumulative effects (WCE) and directed by 1) EPA storm water regulations, 2) CWA legislation (33 USC 1314), and 3) the fact that storm runoff control is a major part of pollution abatement. State storm water design criteria apply to any National Forest activity for which a National Pollution Discharge Elimination System (NPDES) permit or Storm Water Pollution Prevention Plan is required (39 40). Storm runoff and sedimentation are also major components of S305, S319, S404, Source Water Assessment and Protection (re SDWA), as well as a primary contributor to the S303(d) impaired stream list. All of these are expressions of watershed cumulative effects.

Relative to watershed scale, estimating storm runoff is a challenge because few watersheds are well enough gauged to account for the sheer size and complexity of geologic and hydrologic conditions (41). Without such information, WCE analyses must proceed from knowledge about vegetation, soils, and land use factors and their relationship to watershed processes. The WCE structure used in T-Walk integrates design storms with the measure of four fundamental relationships:

- 1) Equivalent Disturbed Area (EDA), as a measure of watershed response, is a primary link to accelerated geomorphic processes and channel stability. Runoff Curve Numbers (RCN) are used to index hydrologic conditions associated with soils, vegetation, and land use (42 43).
- 2) Connected Disturbed Areas (CDA), as a measure of sediment sources and peak flow, is a primary link between sedimentation and the effects on channel processes, stability, and ecological functions.
- 3) Hydrologic Function is a measure of long-term channel response to changes in either flow or sediment regimes. The factors suggested by Bengeyfield and supported by Bevenger (44) characterize channel response in assessed in terms of PFC:
  - Maintenance of the water table.
  - Access to flood plains.
  - Sediment transport.
- 4) Nutrient Degradation is a measure of long-term land productivity in response to changes in land use. As storm runoff increases, soil and nutrient loss tend to accelerate and maintenance of ecosystems becomes correspondingly more difficult.

Although there are differences among States and EPA regions, the 10-year, 24-hour storm event is a commonly used statistic for storm water NPDES permits involving non-toxic materials (45). The 25-year, 24 hour rain storm event is also used if the discharges involve organics or toxic pollutants. These are used here for storm runoff analysis and to differentiate activities that are "safeguarded" from those that are "at-risk" or "failures" (as on the Watershed Water Quality Assessment).

During the extended public review of R-2's WCP, questions arose with regard to how activities were to be tested. That is, make the rules explicit. Some tests including RCN hydrologic condition are based on EPA S304 guidance for silviculture and range management BMPs.

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## TEST PROCEDURES to Classify Water Quality Risk

Test procedures used to classify activities and on-site conditions based on water quality risk: safeguarded, at-risk, or failure.

Land & Water Operations	unit	!	Test Procedures *
-----!-----			
<u>Geophysical Modification</u>			
Agriculture	ac	!	RCN hydrologic condition
Corridors	mi	!	Runoff/sediment control
Deforestation	ac	!	RCN hydrologic condition
Heavy use sites	ac	!	Runoff/sediment control
High hazard lands	ac	!	Runoff/sediment control
Mining, milling, & mfg sites (active sites under permit)	ac	!	Runoff/sediment control NPDES & SWPPP (toxics)
Roads & trails	mi	!	Runoff/sediment control Flood stability/80% life
Silviculture	ac	!	RCN hydrologic condition
Water collection/transfer	mi	!	Hydrologic function
Water storage surface	ac	!	Flow modification BMPs
Wetlands & Riparian altered	ac	!	Hydrologic function

<u>Chemical Contamination</u>			
Bulk transport routes	mi	!	Emergency response/plan
Energy production sites	ea	!	NPDES & SWPPP (toxics)
Land use application	ac	!	NPDES & SWPPP (toxics)
Natural non-point	ac	!	Runoff/sediment control
Point sources	ea	!	NPDES & SWPPP (toxics)
Residue disposal - tox/haz/rad	ea	!	NPDES & SWPPP (toxics)
Solid waste landfill	ea	!	NPDES & SWPPP (toxics)
Tailings & spoil banks	ac	!	NPDES & SWPPP (toxics)

* Test Procedures	Safeguard	At-Risk	Failure
1) RCN hydrologic condition (*1)	good	fair	poor & CDA
2) Runoff/sediment control (*2)	10yr24hr	<10yr24hr	CDA
3) NPDES & SWPPP (toxics) (*3)	25yr24hr	<25yr24hr	CDA
4) Flood stability/80% life (*4)	design	<design	<10yr
5) Hydrologic function (*5)	PFC	FAR	NonF
6) Flow modification BMPs (*6)	applied	not-app'd	SigDeg
7) Emergency response/plan (*7)	in-force	inactive	no plan

- \*1) RCN based on natural potential of good hydrologic condition. (Natural conditions with lower potential, such as arid grasslands, set their own reference for potential.
- \*2) Runoff/sediment control complies with SWPPP and S404 BMPs. Safeguard handles design storm without damage; at-risk does not. CDA= failure.
- \*3) Permits comply with conditions. Safeguard handles 25yr design storm without damage; at-risk does not. CDA and/or no permit = failure.
- \*4) Structures comply w/ S404 & Watershed Conservation Practices criteria for an 80% chance of not being destroyed during its design life.
- \*5) Hydrologic function based on flood access to floodplains, water table maintenance, and sediment transport. PFC= Proper Functioning Condition, FAR= Functioning-at-Risk, NonF= Non-functioning
- \*6) Flow modification BMPs (from COE & S319 process). Significant Degradation is tested with S404 guidelines (40 CFR 23).
- \*7) USFS Emergency response/plan or EPA Spill Contingency guidance.

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